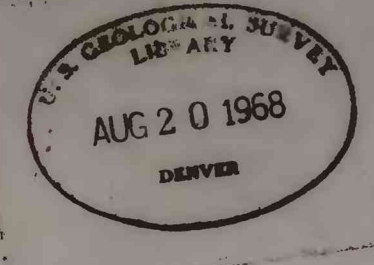


PLEASE REFERENCE IN POKET
IN BACK OF BOUND VOLUME

THE UNITED STATES GEOLOGICAL SURVEY
MOUNTAIN CITY QUADRANGLE, ELKO COUNTY, NEVADA.

EXPLANATION



PLIOCENE

MIOCENE

QUATERNARY

TERTIARY

CRETACEOUS

PENNSYLVANIAN (?)
CARBONIFEROUS (?)
AND PERMIAN (?)

MISSISSIPPIAN

DEVONIAN OR
MISSISSIPPIAN

DEVONIAN (?)

ORDOVICIAN

MESOZOIC

PALEOZOIC

Qal

Alluvium

Sand, silt, and gravel, along
present stream channels

Qc

Colluvium, slope wash, and talus

Qls

Qols

Landslides, rockslides and earthflows

Locally, older landslides, Qols, are distinguished

Qte

Terrace gravels and dissected alluvial fans

Qs

Qgo

Qgm

Glacial moraine and glacial outwash

Locally distinguished as moraine (Qgm)
and outwash (Qgo), respectively

Tcp

Cougar Point Welded Tuff

At base, includes rhyolitic tuffs and lapilli tuffs, cream to buff in color, and dark, carbonaceous tuffs, locally with fossil leaves. Upper part of formation is rhyolitic to rhyodacitic ignimbrite, purplish gray to dark brown or black, where glassy, ranging from compact vitrophyres to friable welded tuffs. All characterized by apatite, zircon and magnetite as accessories. In some of the compact vitrophyres, fayalite and ferroaugite accompany sanidine or anorthoclase(?) and plagioclase. Quartz and sanidine are common, but not ubiquitous. Ferroaugite may be accompanied by or provided for by ferropigeonite, very rarely by hypersthene or hornblende. In less compact welded tuffs, fayalite is always iddingsitized, pyroxene commonly argillized. The groundmass ranges from wholly glassy to crypto-crystalline. A potassium-argon age determination (DCA-1068) on a sample of sanidine from near the base of the welded tuff section on the cliffs of Yellow Rock, east of the Owyhee River, by John Obradovich (oral commun., 1965), gave a date of 12.2 ± 0.8 m.y.

Tmc

Tmf

Volcanic and sedimentary rocks of McCall Creek

At base, a poorly sorted coarsely tuffaceous boulder gravel, apparently a mudflow Tmf. Overlain by a hornblende-biotite-hypersthene dacite, vitrophyre near the base, with a large proportion of phenocrysts. This is overlain by flows of hornblende andesite and pyroxene andesite and by tuff breccia, containing volcanic bombs

Twt

Trt

Welded lapilli tuff of Wall Creek

Medium- to dark-gray welded tuffs and welded lapilli tuffs, rhyodacitic to rhyolitic in composition. Phenocrysts, combinations different in different exposures, include plagioclase, sanidine and ferroaugite, locally with pigeonite; plagioclase and ferroaugite; plagioclase and sanidine, locally with quartz; and plagioclase, sanidine, ferroaugite and quartz. Many bodies of small extent, distorted internal structures, and rich in coarse, glassy lapilli. K-Ar age determinations on plagioclase-sanidine composite grains from five different localities, four by John Obradovich (oral commun., 1966) and one by Richard Harvin (oral commun., 1967), gave ages ranging from 15 to 16 m.y., all ± 0.8 m.y. Locally underlain by white to cream airfall tuff, Trt

Tpb

Basalt of Panguipah Spring

Olivine- and augite-rich olivine basalt,
and olivine andesite

Ttg

Tts

Andesite of Rocky Gulch

Pyroxene andesite, and at base, a flow (Tts) of hornblende andesite near the Mountain City Ranger Station

Tjr

Jarvis Ridge Rhyolite

Porphyritic rhyolite, with crypto-crystalline or glassy groundmass. Phenocrysts generally dominant over groundmass, quartz up to 5 mm in diameter, sanidine phenocrysts somewhat smaller and less numerous, plagioclase scattered. Clinopyroxene recognizable in glassy phases only, and is generally pigeonitic. Accessories include zircon, apatite, ilmenite, magnetite; very rarely topaz or pale pink garnet. Two K-Ar dates, one from Meadow Creek, in the Round quadrangle, of 15.8 ± 0.5 m.y. (Cox, 1964, p. 111), the other from a basal vitrophyre in the Wildhorse quadrangle, of 15.4 m.y. (Evernden and others, 1964, p. 194).

Tsh

Tsw

Seventy Six Basalt

Flows of porphyritic olivine basalt, with conspicuous clear phenocrysts of labradorite, up to 2 cm in size, groundmass subophitic, with plates of porphyritic titanite including grains of olivine, labradorite, magnetite, ilmenite, and apatite. Local patches of mosaic made up of olivine and anorthoclase. In places, there is a thin greenish-gray tuff or tuffaceous sandstone, Tsh, now nonconformable, with plagioclase crystals like those in the flows. Tuff locally has horse remains, probably Barstovian in age (C. A. Repenning, oral commun., 1965).

Tdp

Danger Point Tuff

Tuff, of rhyolitic to andesitic composition, largely non-illuminized, with sedimentary admixture of granitic debris

Tac

Tuff of Allegany Creek

Light cream to pale green in color, locally biotitic, with small lenses of fine gravel and tuffaceous gravel, containing a vertebrate fauna of middle Miocene age (C. A. Repenning, oral commun., 1965)

Tpc

Gravel near Peck Ranch

Cobble gravel, overwhelmingly made up of tan-weathering, jagged, apparently derived from the Van Duzer Limestone of Becker, where silicified near the Roberts Mountain, where

Tth

Rhyodacite of Huber Hill

Pale grayish red to pale pinkish gray biotitic rhyodacite, with sparse phenocrysts, mostly under 1 mm in size, of dark biotite, pale pinkish gray biotite, reddish brown and partly resorbed in section, and oligoclase. Groundmass generally crypto-crystalline. As mapped, may include also welded tuff of similar lithology

Trd

Rhyolite tuff of Rabbit Draw

White biotitic air-fall and welded tuff, with dark smoky quartz, black biotite, sanidine, and oligoclase

Tsa

Andesite of Summit Creek

Largely pyroxene andesite and pyroxene-hornblende biotite andesite. Also biotite-pyroxene dacite vitrophyre

Relative ages of the four units below are uncertain

Thg

Rhyolite tuff and rhyolite of Harris Gulch

Biotitic rhyolite, locally with numerous xenoliths of quartzite, to 2 feet in size; locally at least one perlitic to felsitic dome of rhyolite

Tar

Pyroxene andesite of Russell Gulch

Black, vitrophyre andesite welded tuff, with andesite, augite, and hypersthene, plentiful apatite and magnetite, rare zircon, biotite, and green hornblende. Where devitrified, black to brown feldspar. At base, locally, small amounts of rhyolitic air-fall tuff

Kg

Ka

Granodiorite and quartz monzonite

Biotite and hornblende-biotite granodiorite to quartz monzonite, locally with perthitic orthoclase phenocrysts. Marginally, microcline-microperthite alaskite, Ka, not everywhere separated in mapping

Intrusive contact

POST-OROGENIC ASSEMBLAGE

Crc

Reservation Hill Formation

Fine-grained dolomitic sandstone or siltstone, pale gray, weathering white (or pale reddish brown, in beds 1/2 inch to 2 inches thick, interbedded with thinner beds of graphitic phyllite. The dolomitic sandstone is metamorphosed to rocks composed of various combinations of quartz, calcite, tremolite, diopside, and wilsonite, the last locally coarsely prismatic. Also metagraywacke, micaceous and tremolitic quartzite, rare metachert and quartzite, meta-andesite, metamorphosed to actinolite epidote-plagioclase schist, or hornblende-plagioclase schist. A few lenses of gray, siliceous dolomitic limestone

Cmc

Mountain City Formation

Largely quartz-muscovite-biotite schists, locally with orthoclase, garnet, or graphite; rarely with andalusite, where thermally metamorphosed. Also thin lens beds, up to 2 feet in thickness, now rocks composed of various combinations of quartz, calcite, diopside, tremolite, and clinopyroxene, orthoclase, and muscovite. A few thin beds of metarhyolite tuff, now quartz-plagioclase-orthoclase hornfels

Ca

Nelson Formation

At base, locally a breccia, possibly a pöporite, with limy matrix. Flows and tuff-breccias of andesitic and basaltic composition. Also minor sills of diabase and one lens of rhyolitic tuff. Now largely a green schist of tremolite-actinolite, chlorite, epidote, calcite, ilmenite and relict andesine, in part altered to albite

Cb

Coc

Banner Formation

At base, conglomerate (Cb), with rounded white quartzite boulders, to 6 inches in diameter, grading upward through medium- to fine-grained brownish quartz breccia and gray, tan-weathering siliceous siltstone (not everywhere distinguished). The siltstone grades upward through arenaceous limestone into soft, massive bluish-gray limestone, containing solitary and colonial corals, brachiopods and bryozoa

UNCONFORMITY

Cg

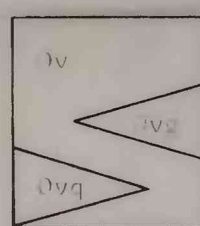
Crossman Formation

Coarse conglomerate with clasts of gray quartzite, black chert, phyllite, and magnetiferous siltstone. Sandstone, siltstone, and phyllite

lvd

Van Duzer Limestone of Becker (19-2, p. 20)

Commonly thin-bedded to very thin-bedded medium- to fine-grained calcarenite and calcarenite, locally grading to quartzite. Certification of calcarenous beds is common. River flows of meta-andesite now chlorite-muscovite-albite-garnet schist. Thin films of micaceous and graphitic material (org. laminae) within the thicker calcarenous beds



Valley cross-section

Small irregular masses of thin-bedded chert, with slate partings, and ranging in color from light to dark gray, rarely black or greenish gray; locally phosphatic or ferritic. Also hard, well-bedded micaceous siltstone and black, quartzose phyllite. Numerous irregular masses, up to 100 feet in size, of greenish gray (meta-andesite), now quartz-albite-garnet schist, and of gneiss and diabase, in which original texture and some of the primary pyroxene and plagioclase are preserved. Micaceous phyllitic limestone, locally phosphatic. Also includes quartzite, lvs, gray to black, locally tan, fine-grained with interlocking textures, rare detrital microcline and zircon, and in the dark-colored quartzite, black carbonaceous material interstratified and disseminated through the quartz grains

Contact

Bashed where uncertain; dotted where concealed

60°

High-angle fault

Dip shown where measured, bashed where uncertain; dotted where concealed. Bar and ball on downthrow side

Thrust fault

Sawtooth on upper plate, bashed where uncertain; dotted where concealed

40°

Strike and dip of beds

REFERENCES

- Coats, R. E., 1964, Geology of the Jarvis quadrangle, Nevada-Idaho: U.S. Geol. Survey Bull. 1141-B, 24 p.
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- Evernden, J. F., Savage, D. E., Curtis, G. H., and James, G. T., 1964, Potassium-Argon dates and the Cenozoic mammalian chronology of North America: Am. Jour. Sci., v. 262, p. 145-198.

THIS MAP IS PRELIMINARY AND
HAS NOT BEEN EDITED OR
REVIEWED FOR CONFORMITY
WITH U.S. GEOLOGICAL SURVEY
STANDARDS.